

CLAIMS

WHAT IS CLAIMED IS:

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1. A method comprising:

receiving an instruction to access a first page; and

determining whether to replace a second page in memory with the first page based
on a reference indicator and a re-reference indicator for the second page, wherein the
10 reference indicator indicates whether the second page has been accessed since the second
page was loaded into the memory, and wherein the re-reference indicator indicates
whether the second page has been accessed subsequent to the reference indicator being
set.

15 2. The method of claim 1, further comprising:

replacing the second page in the memory with the first page if both the reference
indicator and the re-reference indicator are clear.

3. The method of claim 1, further comprising:

20 replacing the second page in the memory with the first page if the reference
indicator is set and the re-reference indicator is clear.

4. The method of claim 1, wherein the determining further comprises:

clearing the reference indicator and the re-reference indicator if both the reference
25 indicator and the re-reference indicator are set and all pages in the memory are in use.

5. The method of claim 1, wherein the reference indicator is set by a memory
management unit when the second page is accessed and the reference indicator was
previously clear.

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6. The method of claim 1, wherein the re-reference indicator is set by a memory management unit when the second page is accessed and the reference indicator was previously set.

- 5 7. A signal-bearing medium encoded with instructions, wherein the instructions when executed by a processor comprise:

 when all of a plurality of pages in main memory are in use and a first page is not in main memory, searching a plurality of entries in a page table, wherein each of the plurality of entries includes a reference indicator and a re-reference indicator; and

- 10 when both the reference indicator and re-reference indicator are clear in a second entry of the plurality of entries, replacing a second page of the plurality of pages in the main memory with the first page, wherein the second page is associated with the second entry.

- 15 8. The signal-bearing medium of claim 7, further comprising:

 when both the reference indicator and re-reference indicator are clear in the second entry, setting a valid indicator in a first entry of the plurality of entries, wherein the first entry is associated with the first page.

- 20 9. The signal-bearing medium of claim 7, further comprising:

 when the reference indicator is set and the re-reference indicator is clear in the second entry of the plurality of entries, replacing the second page in the main memory with the first page.

- 25 10. The signal-bearing medium of claim 9, further comprising:

 when the reference indicator is set and the re-reference indicator is clear in the second entry, setting a valid indicator in a first entry of the plurality of entries, wherein the first entry is associated with the first page.

- 30 11. The signal-bearing medium of claim 7, further comprising:

when both the reference indicator and the re-reference indicator are set in the second entry, clearing the reference indicator and the re-reference indicator.

12. A signal-bearing medium encoded with a page table, wherein the page table comprises at least one entry associated with at least one respective page, wherein the at least one entry comprises:

a reference indicator, wherein a memory management unit is to set the reference indicator when the respective page is accessed in main memory; and

a re-reference indicator, wherein the memory management unit is to set the re-reference indicator when the respective page is accessed in main memory and the re-reference indicator was previously set.

13. The signal-bearing medium of claim 12, wherein a virtual memory manager is to replace the respective page in main memory with a second page from secondary storage when both the reference indicator and re-reference indicator are clear.

14. The signal-bearing medium of claim 12, wherein a virtual memory manager is to replace the respective page in main memory with a second page from secondary storage when the reference indicator is set and the re-reference indicator is clear.

15. The signal-bearing medium of claim 12, wherein a virtual memory manager is to clear both the reference indicator and the re-reference indicator when all pages in the main memory are in use and both the reference indicator and the re-reference indicator are set.

16. A processor comprising:

a page table comprising a plurality of entries, wherein each of the plurality of entries has a reference indicator and a re-reference indicator; and

a memory management utility to set the reference indicator when an associated page is accessed in main memory and the reference indicator was previously clear, and

set the re-reference indicator when the associated page is accessed in the main memory and the reference indicator was previously set.

17. The processor of claim 16, wherein the memory management utility is further to
5 determine whether to raise an interrupt to a virtual memory manager when an address associated with an instruction is not in the main memory.

18. An electronic device comprising:

a processor that
10 sets a reference indicator in a page table entry when an associated page is accessed in main memory and the reference indicator was previously clear, and sets a re-reference indicator in the page table entry when the associated page is accessed in the main memory and the reference indicator was previously set; and
15 secondary storage encoded with a virtual memory manager that clears the reference indicator and the re-reference indicator if both the reference indicator and the re-reference indicator are set, the main memory is full, and a new page from the secondary storage is accessed.

20 19. The electronic device of claim 18, wherein the virtual memory manager further:
replaces the associated page in the main memory with the new page when both the reference indicator and the re-reference indicator are clear.

20. The electronic device of claim 18, wherein the virtual memory manager further:
25 replaces the associated page in the main memory with the new page when the reference indicator is set and the re-reference indicator is clear.